stream become different from the actual arrival time of the digital data stream because of different clock frequencies of the digital data stream and the IEEE-1394 communication interface and the digital data is stored on the streamer as transmitted.

The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein

What is claimed is:

1. A method for creating digital transport stream units, comprising the steps of:

(a) detecting program clock references contained in received digital transport stream packets;

(b) creating the transport time reference for each transport stream packet based upon the detected program clock references and arrival times of the correspondent transport stream packet; and

(c) creating transport stream units by adding each of the created transport time reference to the associated transport stream packet.

2. A method set forth in claim 1, wherein said step (b) creates the transport time reference of each transport stream packet based upon an error, defined as the difference between the time difference of selectively inserted program clock references and the arrival time difference of transport stream packets containing the program clock references.

3. A method set forth in claim 2, wherein said step

(b) increases or decreases the transport time reference by the time corresponding to said error.

4. A method set forth in claim 2, wherein said step (b) creates the transport time reference for an arbitrary transport stream packet received between two transport stream packets having program clock references by compensating the arrival time of the arbitrary transport stream packet by the amount corresponding to the proportion of the arrival time difference between the arbitrary transport stream packet and a first transport stream packet of said two packets to the arrival time difference of said two transport stream packets.

5. A method set forth in claim 1, wherein said transport time reference is the reference information upon which the timing of the transmission of the transport stream packets is based when the transport packets are transmitted to an external device after the transport stream packets are reproduced from a storage medium.

6. A method set forth in claim 1, further comprising a step of recording the created transport stream units on a rewritable recording medium having a digital data recording format.

7. A method for creating digital transport stream units, comprising the steps of:

(a) storing received digital transport stream packets together with their arrival times temporarily;

(b) compensating the temporarily stored arrival time of each transport stream packet based upon the time difference of program clock references and the arrival time difference of the transport stream packets when more than two program clock references are detected from said received digital transport stream packets; and

(c) creating transport stream units by adding each of

the compensated arrival times to the associated transport stream packet as a transport time reference.

8. A method for creating digital transport stream units, comprising the steps of:

(a) detecting program clock references from received transport stream packets while storing the received digital transport stream packets together with their arrival times;

(b) detecting the stored arrival times of the transport stream packets containing the detected program clock references;

(c) comparing the difference of the two program clock references detected in said step (a) with the arrival time difference of the two transport stream packets detected in said step (b);

(d) compensating the stored arrival time of each transport stream packet based upon the comparison result; and

(e) creating transport stream units by adding the compensated arrival time to each transport stream packet as a transport time reference

9. An apparatus for recording digital transport streams, comprising:

a means for detecting program clock references contained in received digital transport stream packets;

a means for comparing the detected program clock references with the arrival times of the transport stream packets;

a means for creating the transport time reference of said each transport stream packet based upon the comparison result; and

a means for constructing transport stream units by adding the created transport time reference of said each transport stream packet to the associated transport stream

packet.

10. An apparatus for recording digital transport streams, comprising:

a means for creating arrival times of received digital transport stream packets ;

a means for detecting program clock references contained in the received digital transport stream packets;

a means for comparing the detected program clock references with the created arrival times;

a means for compensating the created arrival times based upon the comparison result; and

a means for constructing transport stream units by adding the compensated arrival times to the corresponding transport stream packets as transport time references.

11. An apparatus set forth in claim 10, wherein said compensating means compensates the created arrival times of the received digital transport stream packets so that the difference between the detected program clock references equals to the difference between the arrival times of the transport stream packets containing the detected program clock references.

12. An apparatus for recording digital transport streams, comprising:

time information extractor of detecting program clock references contained in received digital transport stream packets;

time comparator of comparing the detected program clock references from said time information extractor with the arrival times of the transport stream packets;

transport time generator of creating the transport time reference of said each transport stream packet based upon the comparison result from said time comparator; and

data constructor of constructing transport stream

units by adding the created transport time reference from said transport time generator of said each transport stream packet to the associated transport stream packet.

13. An apparatus set forth in claim 12, wherein said transport time generator creates the transport time reference of each transport stream packet based upon an error, defined as the difference between the time difference of the detected program clock references and the arrival time difference of transport stream packets containing the program clock references.

14. An apparatus set forth in claim 13, wherein said transport time generator increases or decreases the transport time reference by the time proportional to said error.

15. An apparatus set forth in claim 13, wherein said transport time generator creates the transport time reference for an arbitrary transport stream packet received between two transport stream packets having program clock references by compensating the arrival time of the arbitrary transport stream packet by the amount corresponding to the proportion of the arrival time difference between the arbitrary transport stream packet and a first transport stream packet of said two packets to the arrival time difference of said two transport stream packets.

16. An apparatus for recording digital transport streams, comprising:

transport time generator of creating arrival times of received digital transport stream packets ;

time information extractor of detecting program clock references contained in the received digital transport stream packets;

time comparator of comparing the detected program

clock references from said time information generator with the created arrival times from said transport time generator;

time compensator of compensating the created arrival times from said transport time generator based upon the comparison result of said time comparator; and

data constructor of constructing transport stream units by adding the compensated arrival times from said time compensator to the corresponding transport stream packets as transport time references.

17. An apparatus set forth in claim 16, wherein said time compensator compensates the created arrival time based upon an error, defined as the difference between the time difference of the detected program clock references and the arrival time difference of transport stream packets containing the program clock references.

18. An apparatus set forth in claim 17, wherein said time compensator increases or decreases the created arrival time by the time proportional to said error.

19. An apparatus set forth in claim 17, wherein said time compensator compensate the created arrival time of an arbitrary transport stream packet received between two transport stream packets having program clock references by the amount corresponding to the proportion of the arrival time difference between the arbitrary transport stream packet and a first transport stream packet of said two packets to the arrival time difference of said two transport stream packets.